

Online Education in Covid-19 Period in Terms of Students and Instructors: A Cross-Sectional Assessment Öğrenci ve Eğitimci Açısından Covid-19 Döneminde Çevrimiçi Eğitim: Kesitsel Bir Değerlendirme

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Summary

Objective: The aim of this study is to evaluate the e-learning application that we have realized in the school due to pandemia, where distance education is not provided except for common compulsory courses.

Material and Method: To this end, quantitative feedback has been received from 529 students and 35 educators regarding the education done between March and June 2020. The questions have evaluated the satisfaction on topics such as communication, orientation, duration, content, additional learning resources, synchronous attendance to the lesson, with a five-point Likert scale.

Results: The results showed that the students who participated in the trainings synchronously and those with distance education experience, gave higher scores in all areas than others. In addition, the trainers' scores were higher than the students and they were not affected by variables such as gender, duration of training, etc. Both groups have frequently underlined that individual and institutional infrastructure opportunities need to be further improved. The students stated that the comprehensibility of the lessons should be revised. Being able to communicate and continue education during the pandemic period was the most frequently emphasized positive opinion by both groups.

Conclusions: As a result, it was seen that both groups were satisfied with the application. Issues that need improvement for future applications should be studied.

Key words: Covid 19, distance education, feedback, online learning, pandemics

Özet

Amaç: Bu çalışmanın amacı, Covid-19 pandemisi öncesinde, ortak zorunlu dersler dışında uzaktan eğitim yapılmayan okulda görece hazırlıksız gerçekleştirilen e-öğrenme uygulamasını değerlendirmektir.

Gereç ve Yöntem: Mart-Haziran 2020 tarihlerinde yapılan eğitime ilişkin 529 öğrenci ve 35 eğitimciden nicel yöntemle geri bildirim alınmıştır. Veri toplama formlarındaki sorular iletişim, yönlendirme, süre yeterliliği, içeriğin anlaşılabilirliği, ek öğrenme kaynaklarının kullanımı, derse senkron katılıma ilişkin kapalı uçlu 13'er soru ile birer olumlu ve olumsuz düşüncüyü sorgulayan ikişer açık uçlu sorudan oluşmaktaydı. Kapalı uçlu sorularda 5 li Likert kullanıldı.

Bulgular: Sonuçlar eğitimlere senkron katılan öğrenciler ile deneyimi olan öğrencilerin her alanda diğerlerinden daha memnun olduğunu gösteriyordu. Eğitimcilerin tüm alanlarda öğrencilerden yüksek puan verdikleri ve puanlarının cinsiyet, deneyim, eğitimci süresi gibi değişkenlerden etkilenmediği görüldü. Hem eğitimciler hem de öğrencilerin en sık vurguladığı geliştirilmesi gereken konu bireysel ve kurumsal altyapı olanaklarının daha çok geliştirilmesi gerektiği idi. Ayrıca öğrenciler derslerin uzaktan eğitime göre yeniden gözden geçirilmesi gerektiği konusunu da sıklıkla vurguladılar. İletişimde olmak ve eğitimin devamlılığı her iki grup için de sık vurgulanan olumlu görüşlerdi.

Sonuç: Sonuç olarak, uygulamadan her iki grubun da memnun olduğu görülmüştür. Gelecekteki uygulamalar için geliştirilmesi gereken konular üzerinde çalışılmalıdır.

Anahtar kelimeler: Covid 19, uzaktan eğitim, geri bildirim, online öğrenme, pandemi

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Introduction

E-Learning, with its most common definition, is the way of learning through electronic means, including especially the internet and computers (1,2). E-learning applications (3,4), which have been growing in a planned way since 2000 throughout the world and our country, are the most common form of distance education today (5,6,7). In the literature, it is emphasized that e-learning applications will become more widespread in the future and that they should become even more widespread when unusual situations are considered (6,8). According to the 2017 data, distance education was launched in 1956 in Turkey, and it has been carried out in a total of 65 higher education programs since then (4). While e-learning applications are widely used in some higher education programs in Turkey, others mainly apply face-to-face education. A total of 650 students in nine programs receive vocational and technical education in Dokuz Eylül University Vocational School of Health Services (DEU VSHS), which was established in 1989 (Medical Documentation and Secretariat, Medical Imaging Techniques, Medical Laboratory Techniques, Radiotherapy, First and Emergency Aid, Anesthesia, Audiometry, Nuclear Medicine Techniques, Oral and Dental Health Programs). A classical teaching system is applied as the education model. In DEU VSHS, 90% of the education was carried out face-to-face before the Covid 19 pandemic. With the declaration of the Covid 19 as a pandemic, all programs were transferred to e-learning rapidly in March 2020 (9).

Initially, the Microsoft Teams software was used to implement the classes; after a while, the distance education software of the university, the SAKAI, was put into practice. A total of 41 teaching staff took part in the education carried out during this period. Presentations, videos, and similar resources about theoretical learning objectives were uploaded to the system by instructors before the class hours. Planned question and answer sessions and synchronous lessons were conducted. Homework, projects, and short-answer test methods were used in student assessments (2,10,11). During this period, most of us became “digital immigrants” (5). We were deprived of the educational tools that we were familiar with, and we met with digital media education tools (12). Such

extraordinary situations cause anxiety or fear in both instructors and students (13). Despite all our fear and inexperience, it was observed that educators and students got used to distance education in a short time.

It was aimed to do an evaluation to question this observation and to make necessary improvements in time about setbacks if any. To do this, structured feedback questionnaires, which aimed to collect the opinions of the instructors and students were prepared. It was thought that the data obtained from the study will contribute to the development of e-learning applications of educational institutions with similar experience (14,15,16,17,18).

Method

Online education was launched for theoretical learning objectives in our school in March 2020, when the outbreak of Covid 19 was declared as a pandemic.

Participants:

The Sample, their characteristics and their selection methods should be described in detail and justified.

Data collection and analysis:

In May 2020, a questionnaire that was created on Google forms was sent to all students and instructors who attended education. The questionnaire consisted of a total of 15 questions, including 2 open-ended and 13 multiple-choice questions. Some of the topics in the questions for students were “the contribution of previous knowledge to the comprehension of the lesson”, “comprehensibility of the course contents”, “effective guidance by the instructors about the process”, and “the level of acquiring new knowledge and skills in this process”.

The topics included in the questions for instructors were “the degree of adaptation of the difficulty level of the course content to distance education”, “written and oral participation of students in lessons”, “the level of using additional learning resources other than presentations”, and “the usefulness of distance education in terms of acquiring knowledge”. Moreover, the topics included in the questions for both groups were “establishing effective communication in lessons”, “adequacy of the

length of lessons”, “use of additional learning resources other than presentations”, “rate of attending classes synchronously”, “negative opinions about the process if any”, and “positive opinions about the process if any”. A 5-point Likert type scale was used for the multiple-choice questions (5: Strongly agree, 1: Strongly disagree). The forms were answered anonymously by the instructors and students.

Statistical analyses were performed using the Statistical Package for Social Sciences version 24.0 (IBM Corp.; Armonk, NY, USA). The quantitative data were presented as mean and standard deviation values, and the qualitative data were presented as number and percentage distributions. The fit of the data with normal distribution was analyzed with histogram and Shapiro-Wilk test. Mann-Whitney U and Friedman tests were used to compare the scores given by the students and instructors. Statistical significance level was accepted as $p < 0.05$ considering a 95% confidence interval and a 5% margin of error. Also, the thematic analysis method was used in determining the featured positive opinions in the responses to open-ended questions and the areas that should be improved.

The Questionnaire:

Cronbach’s alpha coefficient of the questionnaires was 0.91 for the student version and 0.76 for the instructor version.

Findings

The characteristics of the students and instructors:

A total of 529 students (81.4% response rate) and 35 instructors responded to the questionnaires (85.4% response rate). Cronbach’s alpha coefficient of the questionnaires was 0.91 for the

student version and 0.76 for the instructor version.

According to the findings, 77.1% (27) of the instructors were female, and the rate of those who had been involved in distance education before was 14.3% (5). The mean working time as an instructor was 14.2 ± 9.5 years. Also, 88.6% (31) of the instructors stated that they implemented more than half of their courses synchronously in this period. Of the students participating in the study, 58% (307) were first-year students, and 70.1% (371) were female. Besides, 65.4% (346) of the students stated that they attended more than half of the courses in this period synchronously.

Opinions of the students and instructors regarding the methodology and content:

The instructors and students evaluated the e-learning application through a 5-point Likert type scale with options ranging between 1 "strongly disagree" and 5 "strongly agree". Each item on the questionnaire belonged to one of the five educational areas (content, communication with the instructor, design, resources, and individual learning outcome). The students gave less than three points to items about "the comprehensibility of educational content", "uploading additional learning resources to the system", and "acquiring new knowledge and skills". Scores given to other propositions were greater than three. As for the evaluations of the instructors, they were found to give less than three points to the item about “written or oral participation of the students in the lessons”. Other scores for the rest of the items were greater than three. The questions for the instructors and students were about similar educational areas. When the scores given by the instructors and students to each of these areas were compared, the scores given by the instructors were found to be statistically significantly higher (Table 1).

Table 1. Comparison of the opinions of the instructors and students about e-learning applications during Covid 19 period (Max 5: Strongly agree Min 1: Strongly disagree)

	Students (n=529) Mean ±SS	Instructors (n=35) Mean ±SS	z	p
1. Effective communication has been established.	3.01±1.164	3.43±0.850	-2.038	0.042*
2. Effective guidance and adequate information have been provided.	3.15±1.193	3.83±0.785	-3.239	0.002*
3. The length of the lessons is sufficient.	3.36±1.331	4.09±0.818	-3.071	0.002*
4. Course content is intelligible (for students). I have been able to adapt my course content to distance education (for instructors).	2.63±1.232	3.57±1.008	-4.341	0.000**
5. Additional learning resources are satisfactory.	2.83±1.243	3.49±0.951	-2.911	0.004*
6. My previous knowledge has helped me understand the lessons (for students).	3.27±1.246	-	-	-
7. Students participated in the lessons orally or by typing messages (for instructors).	-	2.77±1.087	-	-
8. I have acquired new knowledge and skills through these applications (for students). I find the distance learning application useful for acquiring knowledge (for instructors).	2.33±1.151	3.31±1.022	-4.650	0.000**

*Mann-Whitney U test. *p<.05, **p<.01*

The relationship of some variables with the opinions of the instructors and students about e-learning application:

Female students were found to give higher scores to items about "instructor guidance" and "acquiring new knowledge and skills" than male students (Mann Whitney-U test, $z=-2.962$, $p=0.003$; $z=-2.865$, $p=0.004$, respectively). Students with previous e-learning experience gave higher scores to items on "the length of lessons", "content", "use of additional learning resources", "contribution of previous knowledge to learning", and "acquiring new knowledge and skills" compared to those who did not have any previous experience (Mann Whitney-U test, $z=-2.404$, $p=0.016$; $z=-3.365$, $p=0.001$; $z=-3.281$, $p=0.001$; $z=-2.449$, $p=0.014$; $z=-2.915$, $p=0.004$,

respectively). Second year students gave higher scores to the item about "the intelligibility of educational content" compared to those in the first year (Mann Whitney-U test, $z=-2.201$, $p=0.028$). The students who attended courses synchronously were found to give higher scores to all education areas compared to those who did not (Mann Whitney-U test, $z=-8.161$, $p=0.000$; $z=-6.528$, $p=0.000$; $z=-8.295$, $p=0.000$; $z=-8.205$, $p=0.000$; $z=-8.092$, $p=0.000$; $z=-7.369$, $p=0.000$; $z=-7.545$, $p=0.000$, respectively). The sex of the instructors, their previous e-learning experience, seniority as an instructor, and synchronous participation in the courses were found to have no relationship with their scores related to e-learning experience (Mann Whitney-U test, $p>0.05$) (Table 2).

Table 2. The relationship of opinions about the e-learning application with the variables (Max 5: Strongly agree Min 1: Strongly disagree)

	Communication Mean \pm SS	Guidance Mean \pm SS	Length of lessons Mean \pm SS	Content Mean \pm SS	Additional learning resources Mean \pm SS	Contribution of knowledge Mean \pm SS	Acquisition of new knowledge Mean \pm SS
All students (529)	3.0 \pm 1.2	3.6 \pm 1.2	3.4 \pm 1.3	2.6 \pm 1.2	2.8 \pm 1.2	3.3 \pm 1.2	2.3 \pm 1.2
Sex							
Female (371)	3.1 \pm 1.1	3.3 \pm 1.1*	3.4 \pm 1.3	2.7 \pm 1.2	2.9 \pm 1.2	3.3 \pm 1.2	2.4 \pm 1.2*
Male (158)	2.8 \pm 1.2	2.9 \pm 1.3	3.2 \pm 1.5	2.5 \pm 1.2	2.7 \pm 1.3	2.2 \pm 1.4	2.1 \pm 1.1
E-learning experience							
Yes (139)	3.1 \pm 1.2	3.2 \pm 1.2	3.6 \pm 1.3*	2.9 \pm 1.2*	3.1 \pm 1.2*	3.5 \pm 1.2*	2.6 \pm 1.1*
No (390)	2.9 \pm 1.2	3.1 \pm 1.2	3.3 \pm 1.3	2.5 \pm 1.2	2.7 \pm 1.2	3.2 \pm 1.2	2.2 \pm 1.2
School Year							
First year (307)	2.9 \pm 1.2	3.2 \pm 1.2	3.3 \pm 1.3	2.5 \pm 1.2	2.8 \pm 1.2	3.2 \pm 1.3	2.3 \pm 1.1
Second year (222)	3.1 \pm 1.1	3.1 \pm 1.2	3.4 \pm 1.4	2.8 \pm 1.2**	2.9 \pm 1.2	3.4 \pm 1.2	2.4 \pm 1.2
Synchronous participation							
Less than 60% (183)	2.4 \pm 1.1	2.7 \pm 1.2	2.7 \pm 1.3	2.0 \pm 1.1	2.2 \pm 1.1	2.7 \pm 1.3	1.8 \pm 0.9
60% or more (346)	3.3 \pm 1.1**	3.4 \pm 1.1**	3.7 \pm 1.2**	2.9 \pm 1.2**	3.1 \pm 1.2**	3.6 \pm 1.1**	2.6 \pm 1.2**
All instructors (35)	3.4 \pm 0.9	3.9 \pm 0.8	4.1 \pm 0.8	3.6 \pm 1.0	3.5 \pm 0.9	2.8 \pm 1.1	3.3 \pm 1.0
Sex							
Female (27)	3.5 \pm 0.7	3.9 \pm 0.8	4.0 \pm 0.9	3.6 \pm 0.9	3.5 \pm 1.0	2.6 \pm 1.0	3.2 \pm 0.9
Male (8)	3.3 \pm 1.3	3.8 \pm 0.9	4.4 \pm 0.9	3.5 \pm 1.2	3.5 \pm 0.8	3.3 \pm 1.2	3.8 \pm 1.2
E-learning experience							
Yes (5)	3.6 \pm 0.5	3.6 \pm 0.5	4.2 \pm 0.5	4.0 \pm 1.0	3.8 \pm 1.6	2.4 \pm 0.9	3.4 \pm 1.1
No (30)	3.4 \pm 0.9	3.9 \pm 0.8	4.1 \pm 0.9	3.5 \pm 1.0	3.4 \pm 0.8	2.8 \pm 1.1	3.3 \pm 1.0
Seniority as an instructor							
Less than 10 years (16)	3.4 \pm 0.9	4.1 \pm 0.8	4.1 \pm 0.9	3.6 \pm 1.2	3.6 \pm 1.2	3.0 \pm 1.2	3.6 \pm 0.9
10 years or more (18)	3.5 \pm 0.9	3.7 \pm 0.8	4.1 \pm 0.8	3.6 \pm 0.9	3.4 \pm 0.8	2.6 \pm 1.0	3.1 \pm 1.1
Synchronous participation							
Less than 60% (3)	2.5 \pm 1.1	2.7 \pm 1.2	2.7 \pm 1.3	2.0 \pm 1.1	2.2 \pm 1.1	2.7 \pm 1.3	1.8 \pm 0.9
60% or more (32)	3.3 \pm 1.1	3.4 \pm 1.1	3.7 \pm 1.2	3.0 \pm 1.2	3.2 \pm 1.2	3.5 \pm 1.1	2.7 \pm 1.2

Mann-Whitney U test. * $p < .05$, ** $p < .01$

Answers to open-ended questions:

In addition to closed-ended questions, participants were asked to write about any topic that they thought should be developed. The view that "individual and institutional infrastructure opportunities should be strengthened" was emphasized by both the instructors and students.

Also, the students frequently mentioned that the intelligibility of lessons needed to be revised in terms of distance education. The positive views that were frequently emphasized by students regarding this difficult period were "satisfaction with maintaining communication", "efforts of

teachers to do synchronous lessons", "opportunity to watch the presentations repeatedly", and "keeping up with the lessons despite being at home". Moreover, the positive opinions emphasized by the instructors included "seeing that their education can be implemented under any conditions" and "maintaining communication with students" during these hard times.

Discussions and Conclusion

The COVID-19 outbreak has brought about rapid and radical changes in health vocational education (13,19,20). Therefore, we had to adapt our previous education plans and launched an online education process rapidly. To evaluate this process through the eyes of instructors and students, we applied a questionnaire form (14,15). Given the response rates and the results of the consistency analysis of the questionnaires, the results were observed to represent the instructors and students of our school (21).

The instructors were observed to give significantly higher scores to all questions than students. Considering the advantages of the instructors in terms of having infrastructure opportunities and creating educational content, we think this is a reasonable result.

Regarding the socio-demographic characteristics, the sex distribution was high in favor of females. This was thought to have resulted from the fact that the number of females in the universe was more than the number of males, which was representative of both overall Turkey and the student composition of the associate degree programs in our university (22). Also, female students were observed to give higher scores to "guidance and acquiring new knowledge and skills" than male students. According to the literature, the effect of sex on satisfaction with e-learning is variable and is affected by many other sociological factors (23,24).

Second-year students gave higher scores to the comprehensibility of the educational content than first-year students. Learning content should be revised, especially by giving priority to that of first-year students who have less learning experience. In the literature, lesson plans and

methods supported by low cognitive load and increasing interactions are recommended for e-learning applications (25,26).

The rate of previous distance education experience of the instructors and students was relatively low. Only 10% of the classes at our school had been conducted through distance education before the pandemic, and distance education had not covered all our students. According to the results of our analyses, while this situation did not affect the views of the instructors, it was determined that the opinions of the students with previous distance experience were more positive. Experienced students gave significantly higher scores to items about the length of the lessons, content, use of resources, use of prior knowledge, and acquiring new knowledge. These students were more likely to spend their attention on studying course objectives than on spending extra efforts to learn the system. This situation can be evaluated in the context of "perceived ease of use" for the e-learning system. In the literature, perceived ease of use has been emphasized to have an important effect on e-learning satisfaction (24,27). This suggests that as students experience increases, they will benefit more from the e-learning system. Also, if a change occurs in the system in the following periods, the adaptation of students must be ensured for their academic success and satisfaction (18,28).

The analyses indicated that all the scores given by the students who attended the 60% or more of the courses synchronously were higher than those of the others. In a meta-analysis conducted in 2019, synchronous webinars were shown to be more effective in terms of student satisfaction than asynchronous ones. This was attributed to the lack of instant feedback and the unavailability of interaction in asynchronous learning environments (29,30). Also, sex, experience, seniority as an instructor, and the status of synchronous participation were observed to not affect the scores given by the instructors.

Both educators and students were observed to emphasize that individual and institutional infrastructure opportunities needed to be developed.

Some studies in the literature have reported that the most important issue affecting the effectiveness and satisfaction with e-learning applications is infrastructure possibilities (6,11,27,31). The students frequently emphasized that the intelligibility of the lessons needed to be revised according to distance education standards. Revising the curriculum in e-learning designs is also important in this respect (25,26). Maintaining communication and ensuring the continuity of education were other frequently emphasized positive views.

The limitations of the study included the collection of data from a single school giving health vocational education and the use of a cross-sectional design. Our results may not be generalized due to the diversity in curriculum and student composition in healthcare education. On the other hand, the study is thought to be important as it is considered to contribute to the evaluation of the e-learning application that has been launched relatively unprepared during the Covid-19 period in Turkey. Also, institutions giving healthcare education can benefit from each other's experiences during the pandemic period through information sharing. Moreover, these assessments need to be made urgently to improve future e-learning activities.

In conclusion, according to our experience, our instructors and students found the e-learning application carried out during the Covid-19 period as valuable. Also, adaptation training programs have been planned to review the intelligibility of the course contents and to increase the synchronous participation and contribution of students to courses

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